

ITEMS OF INTEREST.

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Notes from the Profession.

TOOTH DEVELOPMENT.

PROF. CARL HEITZMANN, OF NEW YORK.

[Discussion in N. Y. Odontological Society.]

There was a young man in the far West who did farm work till he had grown to be twenty-four or twenty-five years of age. Then he made up his mind to learn to read and write, and he began to learn the a, b, c's. His name was Bob. He found another young man who could read and write, and he engaged him to teach him his a, b, c's. The teacher's name was John. When Bob, who was a very intelligent fellow, reached the letter k he suddenly jumped up and ran out of the door. John shouted after him, "Bob, where are you going?." Bob turned to his teacher and boastfully said, "Now I am going to teach the a, b, c's, John." The gentlemen who have attempted to talk about the history of the development of the teeth this evening have only reached the letter k of the a, b, c's, and that includes myself, because in my twenty-five year's work on the teeth I have not yet reached the letter z in the alphabet of their histology.

Teeth have been found in the ovarian cyst. The theory of some is that remnants of previous epithelia, which once helped to form teeth, were transported into the ovary, there developing teeth, or that perhaps the epiblast which produces the tooth originally might have caused some mischief in the ovary, giving rise to teeth in the ovarian cyst. But, gentlemen, how is it possible that in the ovary not only teeth are present, but there are hairs, bones cartilage, and even muscles? We know a theory that will explain it: In the earliest period of the development of the embryo there was developing another, inclosed in the ovary, and parts of the inclosed embryo developing in the ovary were left and grew there, just the same as if present in the womb.

Quite recently I was asked to see a tumor which was removed from

the abdominal cavity of a living woman by Dr. Mundé, replacing one of the ovaries. I cut into and found it hollow. I examined it under the microscope, and much to my surprise, I found this to be the chorion, with its villusites, of a six weeks embryo. This fact gives a positive hint as to the development of teeth in the ovary. But why should we speculate and argue about the presence of teeth in the ovaries of women? If we only knew the history of their development in the mouths of men we should be a very happy people; but we do not. In the last twenty-five years I have seen plenty of specimens, but notwithstanding such a large experience I cannot say that I am ready to settle this subject positively.

We are told it is mere speculation to maintain that the dentine is kindred to bone-tissue, because in the latter there are globular territories which are lacking in dentine. But have these gentlemen ever seen the so-called interglobular spaces of Czermak, by no means a pathological condition? They often occur some distance below the enamel traversed by canaliculi. Have they seen the bay-like excavations of dentine of temporary teeth, invariably present in the process of dissolution, preceding the falling of such teeth, or the specimens of inflammation of the dentine, where bay-like or globular excavations occur, traversed first by dentinal canaliculi, and latter broken up into medullary corpuscles?

Let us inquire about the history of the development of the dentine. I will draw here the boundary line of the dentine toward the pulp, and close to the dentine the odontoblasts, which send offshoots into the dentinal canaliculi; two or three dentinal fibers, sometimes only one. How, by the calcification of these odontoblasts does the globular basis-substance of dentine rise? For it seems not only antique, but almost antediluvian, to speak of a secretion as causing the formation of the basis-substance. What is the explanation of the fact that in the recently formed dentine there are fields of basis substance much narrower than the original odontoblasts? I have studied this question over and over again, and have come to the conclusion that the odontoblasts cannot be direct dentine-formers. To explain the formation of the globular character we must take another ground,—that the odontoblasts are not permanent, stable forms. They are forms which rise and are visible during the period of rest of the pulp-tissue. As soon as dentine is about to form the odontoblasts break down or split up into medullary corpuscles; and we often see directly the globular shape of groups of such corpuscles. Between the medullary corpuscles the dentinal fibers are formed, though they were originally in connection with the odontoblasts. The odontoblasts are not direct formers of the dentine, but the medullary corpuscles are, just the same as in any

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other variety of tissue. The odontoblasts are materially the same formations in relation to future dentine as the osteoblasts in forming bone-tissue.

We have learned something from the careful researches of Dr. Bödecker, and it does not make any difference that they were made in my laboratory. Dr. Bödecker was the first to find that the enamel and the dentine are both living tissues. A celebrated worker in dental histology was here three years ago, Prof. Wedl, my old teacher. He visited my laboratory, and we discussed this enamel question. He was then sixty-nine years of age. I asked Prof. Wedl his opinion about the enamel-fibers which Dr. Bödecker has discovered and described. He said: "There is not the least question in my mind that the enamel-prisms are separated from each other by narrow interstices." Dr. Tomes, of London, was here last year, and was shown enamel in Dr. Bödecker's house. He drew the fibers between the rods of the enamel just as we see them. Take a temporary tooth and grind it, and you can easily see the enamel fibers. Or take a section of pigmented enamel, and you will see the fibers, because in the pigmented enamel the difference in color is greater than it is in ordinary white enamel; the interstices are wider and the fibers plainer.

Now we come to the question of the development of enamel. It is the most difficult question of all. After the sixth week of embryonal life, a prolongation of the stratified epithelium of the oral cavity is formed,—a solid peg, which is admitted to be the future enamel; from the embryonal connective-tissue is formed a button-like projection,—the parilla, which is the future dentine. The epithelial peg is originally solid. Does it remain solid? No; in the third, fourth, or fifth month of the embryo, before any dentine begins to grow, you distinctly see that the epithelial peg becomes hollowed out, and in its interior is seen a myxomatous tissue—a beautiful reticulum. Whence is that myxomatous tissue? Nobody has maintained that myxomatous tissue is epithelial tissue, but it is admitted to be a variety of connective tissue. Nobody will maintain that migrating corpuscles have crept through the epithelium to produce myxomatous tissue; therefore we must argue that the latter has developed from the epithelia. But we are told that epithelia will never produce connective tissue, for these are tissues of their own, independent of each other. Such a man overlooks the fact that the whole nervous system of the embryo is developed from the epiblast, which is distinctly epithelial. The original brain and spinal cord is a prolongation of the epiblast. From that rises the nerve tissue, which is freely mixt with connective tissue and freely vascularized. I deny that there is no transition from epithelial to connective tissue and vice versa, though I concede that nobody else would admit such a liberal view, contrary to all that the books teach.

All the previous assertions as to the formation of the enamel-prisms directly from the ameloblasts must fall to the ground. Before the ameloblasts are formed there are present medullary corpuscles; and before enamel rods do form the ameloblasts are again broken up into medullary corpuscles. The same rule holds good in respect to the history of development of enamel that applies to the history of development of dentine. In one case it goes toward the center, centripetally, and in the other toward the periphery, centrifugally. The ameloblasts are merely provisional forms, similar in aspect to epithelia, the same as are the odontoblasts and osteoblasts.

That already formed tissues of a certain type do change their character by falling back into the medullary or embryonal condition, afterward giving rise to an entirely new tissue, is a well established fact in histology. Look into the history of development of bone. In the embryo there is no bone; there is cartilage only; for the first tissue that forms from the medullary tissue is cartilage. This, before being transformed into bone, falls back into the medullary condition, and the medullary tissue at last forms bone. The process of the knitting of a broken bone proves this. What we call provisional callus is nothing but cartilage. The medullary or inflammatory corpuscles in this instance first form cartilage,—not directly bone,—but the cartilage breaks down into medullary tissue afterward, and at last rises bone tissue, the permanent callus.

Dr. Abbott has not insisted on the fact that caries is primarily an inflammatory action. He says in a foot-note first that a dead tooth decays,—is destroyed in a chemical way,—meaning by acid, of course. Dr. Abbott says that in living teeth the first impulse to decay is an acid that works on the enamel, and from that impulse comes the process of disintegration. He speaks several times of micro-organisms in his paper. He simply claims that in living dentine and enamel there is a reaction on the irritation, and that you can see, before the dentine and enamel decay, a zone containing medullary corpuscles. He claims that there is a reaction on the injury done by decay. To say that caries is primarily an inflammatory process would be a mistaken ground; and nobody is willing to claim there is inflammation in a dead tooth. The enlargement of the tubules is not caused by the growth of leptothrix and micrococci alone; there is a decalcification before decay, and decaying material is just crowded with such micro-organisms; and on the irritation of this decaying material sets in an inflammatory reaction in a secondary way. You can see in Miller's specimens that the growth of micro-organisms does not go so far as the decalcification goes. Therefore, there is first decalcification; then a growth of leptothrix. All decay does not depend on the leptothrix. Behind all this decal-

cified zone you invariably see, in specimens taken from live teeth of man, and preserved in a chromic-acid solution, inflammatory changes. Such specimens of caries are to be seen in my laboratory in any number.—*Cosmos*.

CELL LIFE.

PROF. G. V. BLACK, JACKSONVILLE, ILL.

[In New York First District Society.]

The cell is the unit of physical life. No matter whether that cell represents a complete individual as we see it in the ameba, or is a component of the complex individual, one among the multitude that make up the sum of the higher animal forms, or their individual parts, as we see it in the stellate reticulum of the enamel-organ. This doctrine has been taught so long and so well that everybody understands it.

Everybody understands it,—outside of New York. I have said *the cell is the unit of physical life*,—I am not talking of spiritual life,—and it has certain characteristics in its dealings with matter which are common to all units of physical life that exist on this planet. These are its physiological attributes, and they may be summarized in four propositions.

First.—Each cell is capable, when in contact with certain material, of furnishing or elaborating a substance capable of digesting food-material, or preparing it for absorption and assimilation. This you may call diastase, soluble ferment, unorganized ferment, enzyme, or by any of the words in use to represent the digestive agent.

Second.—It is capable of assimilating the food so prepared. Assimilation results in growth.

Third.—Every individual unit of life is capable of de-nutrition. This consists in shedding out, in the form of waste products, material that has once been formed into protoplasm, or used in connection with the nutritive process.

Fourth.—It has the power of reproduction in a definite line of forms.

These four powers may be—yes, they are—varied widely among the different organisms with which we meet. They are capable of living on widely different foods, and the digestive agent elaborated is different—that is to say, adapted to the digestion of different foods. Then the waste products differ widely among the different organisms, and yet they have much in common, as we find them in the animal, the vegetable, and the so-called third class—the kingdom of the microbes. They are urea in the animal; alkaloids and the organic acids in the vegetable; the alcohols, organic acids, and the tomins in the microbes; alcohol as seen in the torula or vinous yeast fungus; acetic

acid in the fungus of that name, and in case of another micro-organism, as the bacillus anthracis, it is a tomain that is exceedingly poisonous. This class we call septic poisons. When we see certain peculiar symptoms in connection with a wound we say septic micro-organisms have invaded that wound, and observation teaches us that the patient is in almost as much danger as if stung by a viper. These substances are in every case the result of re-moleculizations of matter under the influence of the vital processes of living cells,—and this is fermentation.

In this we have the explanation in brief of the process of fermentation which Robertson and his contemporaries could not explain. The organism which produces caries has been found, and its essentials of physiology made out; the waste product—lactic acid—found, and its action in the production of caries explained. Some seem to regard this as a new theory, but it is only the further development of the theory of Robertson, propounded in 1835—namely, that caries results from fermentation, with the production of an acid that acts on the lime-salts of the teeth, and *acts independently of the vitality of the dentine*.

Now, these propositions are true, not only of the units of life as represented in the low organisms, the microbes, but they are true also of those high in the scale of life as well. In the lower forms, where the cells fall apart, each performs all of these functions for itself; but in those organisms that are formed by the union of many units of life there is a certain dependence the one on the other—a certain tendency to divide the work,—a tendency to specialization and the formation of specialized organs. Each cell makes a part of a certain group composing an organ,—and we have one group forming bile; another forming pepsin for the purpose of digestion of food; another forming mucus; another separating the waste product of all (urea) from the blood; another doing this and another that in the general work of organism. Among these, some little groups are for a time employed in building teeth. We find it stated by good authority in matters of physiology that these cells are never mixed up in the work they perform,—that each group attends to its own special duties. This leads to another proposition. *There is a certain impress made in the fertilization of the ovum or seed that preordains just how far this differentiation shall go.* Epithelium remains epithelium, though it is modified for the formation of the glands and various structures, including the brain, (more properly the nerve or brain-cells, including those of the spinal cord), but never becomes connective-tissue. The connective-tissues, on the other hand, form the tissues of support and motion, and the blood vascular system, and never under any circumstances form epithelial tissue.

ITEMS OF INTEREST.

Some of our New York friends advance a doctrine, that denies the existence of the cell as an entity in physical life; depreciating it to the position of a mere node of the so-called reticulum of bioplasson; and assert that this reticulum is the life, or that the life resides in this reticulum, and that this reticulum runs continuously from node to node, mixing in and around in every direction, pervading in continuity the entire animal. The man, according to this view, is a great big ameba, reaching out his arms and legs—a great ameba, not made up of units, but one life throughout,—spiritually, perhaps. But he is made up of cells; and each of these cells has its peculiar individual life. My friend says “No.” He tells you he sees these protoplasmic strings with his microscope. Let me say that it makes little difference what this or that man may claim to see. The important factor is the interpretation of the thing seen. The interpretation placed on these protoplasmic strings is substantially that in them resides the life of the organism, and that these threads are continuous throughout, uniting the life in one continuous whole, and it is also a denial of the individual life of cells of which physiologists have claimed that the body of the man is composed. This is distinctly extended to the vegetable kingdom as well, and illustrations are given of these strings connecting the life of the vegetable cells. This doctrine must stand or fall not alone on what this man or that may claim to see in his microscopic preparations, but on the broader observation of physiological processes as well. To establish it, these different forms of observation must coincide in their results.

Now we are ready for some illustrations of physiological processes. First, in vegetable life. We will take a very simple thing, one that all of you can understand. I think you all know of the process of grafting of budding fruit-tree. All know of the bell-flower apple, and of the crab-apple. Now, a long time ago some man, seeing the difficulty of obtaining a given kind of apple from the seed, on account of the mixtures of pollen by which the flowers are fertilized, hit on the conception of snipping off a little bud from the bell-flower tree—any kind of an apple will answer the purpose of illustration as well—and planting it in the tissues of the crab-apple. He knows nothing about cells or protoplasmic strings, but he snips off the little bud composed of only a few cells, comparatively, and plants it in among a multitude of cells composing the tissue of the crab-apple tree. He ties it—fixes it there—and hopes it will grow. It does grow. Now we have a few cells from the bell-flower mixed with the many of the crab-apple, and according to this string theory the life becomes one throughout. Our experimenter watches the growth of the little bud into a branch; after awhile a flower comes; and finally the fruit is developed. It looks

like a bell-flower apple. It is a bell-flower apple, having the form and flavor. How is this? It is one life. The tree is a crab-apple tree, but the new branch is like the bell-flower, and the fruit is bell-flower. We see by this that while there is a physical union of those cells there is no life union. Each of the individual cells has a life of its own, and *its progeny retains forever the impress made in the fertilization of the seed*; no matter how often it may be transplanted to and mixed in with cells of a different nature. Therefore, the interpretation our friend places on the strings which he claims to see cannot be true. Now, an illustration in animal life. Let us suppose that by any kind of accident I have the skin torn off the back of my hand,—every bit of the epithelium is removed. Even the sweat-glands are destroyed, and no epithelial cells whatever remain. Now, we have certain cells in this body of ours that seem to be set apart for making repairs where there is a breach of continuity such as this,—the wandering cells. They are continually creeping, ameba-like, through the tissues and floating in the blood-streams, and in such an accident they collect at the point, and are built up into granulations to fill the breach. But epithelium does not grow on these granulations. What is the matter? We have heard that epithelium produces connective-tissue, and on the same principle connective-tissue ought to produce epithelium when it is needed. The life is all one; there is no individuality! But it does not. Without assistance, the covering must await the slow process of the projection of the epithelium by growth from the margins of the wound. But we clipt off the epithelium from somewhere else, or from the body of another person, and stuck it down among the granulations. It grew from each point where we planted a few cells, and spreading out from these points soon covered the wound with new epithelium. It did not produce connective-tissue! At one time we had a negro with a great burn on his back. We clipt off little bits of epithelium from a white man and stuck them down among the granulations, and they grew. Now, if life is all one, if these cells have no individual life, the living substance of the cells grafted in should become mixt with the general life of that negro, and the effect would be imperceptible. But, no; the result was the production of a patch of skin just as white as that of the white man from whom it was taken.

This does not look much like sustaining the doctrine that there are no individual units of life that are maintained in the make-up of the individual man. That epithelium retains its individual life,—carries with it the impress made in the fertilization of the ovum from which the white man was developed, and carries its peculiar characteristics into strange places.

I think these illustrations sufficient to show you that this bioplasson

doctrine will not bear the test of physiological scrutiny. No matter what claims may be made as to seeing this reticulum connecting the cells, the interpretation placed on it is wrong, and all theories based on it topple and fall to the ground.—*Cosmos*.

LIVING MATTER AND ARSENIC.

DR. T. D. INGERSOLL, ERIE, PA.

There are times when one cannot follow the instructions of his superiors, and he must depend on his own resources in mastering difficult circumstances in which he may be placed.

In 1878 a lad presented himself with badly decayed incisors, but he could not endure the gentlest movement of excavators. The usual remedies were applied to the cavities without effect, and he went home with tears in his eyes. The next day his parents came to encourage him but to no purpose, and they advised "killing the nerve." Knowing how difficult it is to destroy the entire pulp of some teeth, an experiment suggested itself—(which had previously been successful)—to obtund the sensitiveness of the dentine with arsenic. It was fully explained to the parents and they requested a trial. Arsenic was accordingly placed in the cavity of one tooth, and the patient was then dismissed and directed to return in two hours, when the arsenic was removed and the cavity filled with cotton to remain twenty-four hours.

On the following day, the cavity was excavated and filled without pain. In that way three other teeth were filled day after day, and were often seen to be in a comfortable condition for three years, when the youth and his parents moved to the State of Vermont. Since that time several teeth have been treated and filled in a similar way and are now doing good service.

So little is known about the life of the pulp, and the effect this exceptional treatment may have on each particular tooth, that one cannot predetermine what will be the result: and one ought to hesitate and proceed cautiously, fearing much trouble if not the loss of the tooth, for some teeth will bear but little irritation before death of the pulp, while other teeth seem to have a cat-o'-nine year life; and between the two classes of teeth there are no distinguishing features.

The arsenic was not placed in contact with the pulp, but against the sensitive walls of the carious cavity to destroy the living matter they were supposed to contain, and it was also supposed that all life in the dentine that was in contact with the arsenic was destroyed, for after a few hours the dentine seemed insensitive to the action of cutting instruments.

The fact that dentine is sensitive, admirably sustains the dental

microscopist's discovery of living matter in that hard substance, (tho it be denied by some), being the cause of that kind of sensibility which characterizes all the higher forms of life. Sensitiveness seems to be an essential property of living matter whether it be in an elephant, a sensitive plant, a bird, a swarmspore of the fresh water alga, or in the hard tissue of a human tooth.

The destruction of a small quantity of living matter in the dentine may or may not destroy the pulp, for arsenic may be put in actual contact with the pulp of some teeth with apparent impunity, while one application to some other pulp will cause death in a few hours. A tooth containing such a pulp with the drug in the cavity of decay when the pulp is not exposed, the poison might devitalize not only the living matter in the dentine which was in contact with it, but also the entire pulp. As a diseased finger may be severed without destroying the hand, so may a diseased portion of the living matter of a tooth be cut away without destroying the pulp, the arsenic rendering the operation painless.

Notwithstanding all the danger, and all the warning against the use of arsenic by some of the first and oldest in the profession, it is believed that there are teeth which will certainly be lost unless they are given a similar treatment; but it can be recommended only when the patient refuses a safer operation and will let the tooth go to destruction rather than bear the pain it may cause.

EDITORIAL REMARKS.

FOR FOUR OR FIVE YEARS of our dental practice we followed Dr. Ingersoll's course. At the end of that time we were called on to treat two upper left molars and a second bicuspid, which were but slightly decayed on their grinding surfaces, but very sensitive. Tho mere "pin holes," the young lady could not allow any excavation. I decided on the arsenic application. The next day or so I excavated and filled with amalgam, without any pain to my patient. In less than three months, she returned with all the symptoms of inflamed pulps. After she had suffered very much I was obliged to extract all three teeth. I found the pulps in an extremely vascular condition, and the homeopathic doctor present said: "You can see now the terrible effect of amalgam." I had not courage to give the real cause. I had had two or three other cases similar, tho not so aggravating, nor with teeth so nearly perfect, but now "I resolved to do so no more." I have never had arsenic in my office since.

Whenever pink or other rubber adheres to its packing cloth, immerse in cold water for a few minutes. The cloth will peel off as "slick as an onion."

White Hall, Ill.

T. W. PRICHETT.

INHALER FOR ETHER.

It is well known that the less ether is inhaled to produce unconsciousness, the less disagreeable will be the after effects; and the less air inhaled, the easier and shorter will be the process of etherization. A good inhaler must have four good qualities: be of a convenient size and shape, economize ether and exclude air; be simple in construction, so that it may readily be cleansed; and cheap in price. A sponge will neither exclude air nor economize ether. A good one is, moreover, very expensive and difficult to obtain. Many inhalers in the market have their excellent points, but all expensive. After many experiments and unsuccessful attempts to obtain a satisfactory inhaler, I thought of the following device, and can recommend it as the best and most economical inhaler. Buy the small-sized bowl that the dentists use for mixing plaster in—the so-called plaster-bowl. It is made of soft, vulcanized rubber, and is about four inches in diameter, and three inches in depth. It is so soft that it will fit closely to the face, and exclude atmospheric air, and prevent the evaporation of the ether. Within this bowl place any cheap sponge of suitable size, and the inhaler is complete.—*Technics.*

When the teeth are soft and sensitive, and affected with white decay, we remove the softened portion of decay and fill with gutta-percha or cement, leaving it so for several months before attempting to insert gold. Sometimes removing this temporary filling, shaping the cavity and refilling with cement for several months longer. The cause of so many failures with this class of teeth is haste in preparing the cavities and inserting gold, not allowing nature sufficient time to fortify. With the darker variety of caries this treatment is not necessary.—*F. M. Hamsher.*

Alveolar Abscess.—If a portion of the root be amputated and patience be exercised, the tooth will be saved. In my own limited experience I have many times seen the root denuded, and after amputation the case got well. It is sometimes possible to distend a fistula by means of a sea-tangle tent, or compressed sponge, till access can be obtained to the root. Then excise the abscess.—*Dr. Ames of Illinois.*

Incurable Alveolar Abscesses.—Why are they called incurable? Cut out the diseased tissues and the carious bone, which is always present and they disappear. There is a cavity at the end of the root, and this is filled with some form of deposit. I have removed everything from the lateral to the second molar, and yet under careful treatment the whole was restored, and the teeth restored to usefulness.—*Dr. Brophy.*

DENTAL SUGGESTIONS.

DR. F. W. WILLIAMSON, REDWING, MINN.

MUCH OR LITTLE WATER IN VULCANIZING?

I noticed recently in one of our leading dental offices that in vulcanizing a case the boiler was filled nearly to the brim with water. If those who still follow that method would put but a half-dozen spoonfuls in a steam tight boiler, even placing something under the flask to keep it from the water, they may discover three advantages in the device: a tougher plate; absence of much disagreeable odor, and models and investments disintegrated. Give a little longer time for vulcanizing by this method. Those who offer new machines for accomplishing this purpose may not thank me for this suggestion.

HOW TO BUR A TOOTH CAVITY.

Strong pressure on the bur, and slow revolutions over sensitive dentine, and the same method carried from the margin of a cavity down deep toward a nerve, give unnecessary pain. Continued pressure on the bur generates heat in the tooth—one of the most disagreeable sensations to the patient. Consciousness of the patient that the bur is cutting its way toward a nerve is of itself painful, specially so when the cavity is deep. The painlessness of a swift perforation of the flesh by a bullet, or the swift stroke of a sharp instrument, gives a hint, in the right direction. As far as practicable in deep, sensitive cavities, place the bur at the bottom of cavity and cut outwardly, running the engine swiftly, then with light pressure pass rapidly over the parts to be excavated with moderately rapid intermittent strokes of the bur, when, if your instrument is sharp, no frictional heat will be generated, and the actual cutting will take place before the patient realizes it.

MAKING RETAINING POINTS.

Though many are now largely doing away with distinctive retaining points, a suggestion is applicable where they are indispensable. In highly sensitive cases, my Bonwill is run at its highest speed, and with a small stone-cut bur, kept for that purpose, and no other I sink the point desired by light recurring touches, selecting a location, if practicable, inside the loops of the dentinal fibrils at the periphery of the cavity.

AN ABSORBENT HOLDER AND HIDER.

I want to suggest to you to put on the market a little convenient device I have long had in mind, before we see it advertised under some other man's name—a frequent dental experience. It is of dual form and might be designated an Absorbent Holder and Hider. Some one has already got the idea of the first named part, but the last part would be the climax of the device. It should be a box, with a perforated

top, containing a drawer, for hiding the cotton or other absorbents immediately after removing from the mouth. Across the perforation, under the top, should extend teeth or little bars attached by a spring, which should settle down when pressed by the tweezers containing the unsightly absorbent used, seizing and detaching it as the tweezers are withdrawn. This part of the device should not be transparent, whether my description is, or not. The other part, or holder, I am willing the manufacturer should shape *ad libitum*.

VULCANIZABLE GOLD.

DR. A. ROBINSON, GRAND RAPIDS, MICH.

In an article in August "ITEMS OF INTEREST," "Vulcanizable Gold," the writer condemns the use of gold lined plate because "sole agent" in his advertisement does not go into all the whys and where-fors that rubber is injurious to the mucus surfaces of the mouth. It is a fact well known to dentists and needs no proof or argument that rubber produces an inflamed condition of the mucous surfaces, which is not produced by metal coming in contact with the mouth. Now rubber is the best article for the masses because it is cheap, and if the inflamed condition can be prevented by the use of vulcanizable gold, or any other gold or metal that will adhere to the rubber firmly, it is the duty of all dentists to give to their patients *Metal Lined Plates*. With regard to obtaining an advanced price for the Gold Lined Plates, it should be hailed with delight. Any article that will raise the price of artificial dentures from \$5.00 or \$8.00 a set, which price seems to be the prevailing one among the dentists of Michigan, ought to be regarded as a blessing to the dentists. In regard to the beauty of Gold Lined Plates, there can be no comparison with unlined plates, as the latter, is unquestionably disgusting and absolutely nasty, whereas a Gold Lined or Metal Lined Plate when properly finished is neat, clean, and healthy. As to the wearing off the Vulcanizable Gold, I have now used it in 9 out of every 10 plates I have made for two years, and have never found a single plate where the gold has separated or worn off from the rubber, and that is the experience of every one who has used it except the critic in June ITEMS. Some cases I have watched carefully for the past two years. To prove that the dentist is not obliged to caution the wearer of the plates lined with Vulcanizable Gold against brushing (as the writer says) I would ask the writer to use the *stiffest* brush wheel on his lathe to polish with, I think that is as good a test as can be given, and certainly no patient during the ordinary life of a rubber plate can with a tooth brush produce as much friction and wear as 15 minutes with a lathe and stiff brush wheel. If the Gold lining is ever marred it must be with the ivory handle of a common

tooth brush by carelessly scratching it while cleaning, for it cannot be disturbed in the least with the bristles, or brush properly used and with suitable care.

ALVEOLAR ABSCESS.

DR. M. H. FLETCHER, CINCINNATI.

Dr. Elliott in June ITEMS OF INTEREST cites a case of thickened membrane at the apex of a root of an inferior first molar which would not yield to several weeks' medication. He also asks, "should the canals have been opened to the foramin?" I would say, whatever the condition of inflammation outside of the foramin of a pulpless tooth, a drill of any kind in the pulp canal only adds to the difficulty of its successful treatment. The roots are generally crooked so that often a drill will pierce and wound the external membrane, which will not readily heal. A crooked root can be made the channel through which all treatment necessary may be done, for fluids required for treatment will pass freely through any opening which is large enough to admit the smallest blood vessel. If the apex is stopt the object is already accomplisht. The inflammation mentioned by the doctor was probably caused by the presence of some fluid as saliva, in the cancellous portion of the bone, or by the pulp canal being closed at the crown and open at the apex, or by too much medication. Saliva is poison to such tissue much as extravasated urin is to the tissues outside of its normal tract. Again a pulpless tooth, with no external opening at the crown end and the apical foramen fully open, is simply a reservoir for putrid material, and it is easy to see such a condition will keep the tissues surrounding the apex of such a tooth inflamed. The reasonable object of any treatment can only be to remove the exciting cause in the most expeditious manner, and when this is done nature will kindly do the healing. In abscest teeth with fistulous openings this object is most quickly accomplisht at the first sitting by filling the root to the apex, or till the filling extends from the fistulous opening, if such opening be not a great distance from the point of the root. Abscesses with no fistulous opening should have the exciting cause removed and the root carefully filled to the foramin. I have within the past ten days opened and filled two abscest molar teeth with no fistulous openings, both having large fillings in them. After drilling through the crown into the pulp chamber and allowing the gas and serum to escape, I have with the best of results filled the pulp cavity with cotton with an anti-septic for two or three days, and then filled with dissolved gutta-percha without further treatment. If there is after-inflammation it may be generally reduced by local treatment with counter-irritants such as capsicum plasters, tinct. of iodin or the positive pole of a Faradic bat-

tery, the other pole applied to some other part of the body, usually the hand. The most non-irritating and tractable material for filling roots is gutta-percha dissolved in chloroform to the consistency of cream. This may be injected through the tooth till it appears at the mouth of the fistulous opening; even in blind abscesses this is entirely non-irritating unless too much of it be forced through the foramin. The healing will progress rapidly under this treatment. Prolonged meddling in alveolar abscess is analogous to continually removing the scab from a sore soon after it has formed, and thus hindering, rather than hastening the healing process.

CO-ORDINATION OF VOLUNTARY MUSCULAR MOVEMENT.

DR. GARRETT NEWKIRK, CHICAGO.

This is certainly one, if not the only, office of the gray matter of the cerebellum.

This co-ordination of voluntary muscular movement is one of the most wonderful results of life. It begins to be manifested before birth. Then, as we watch the movements of an infant newly born, we observe that while these are weak and awkward, there is something of regularity and correspondence, showing that the organs have taken their first lessons. Day after day witnesses an increase of nervous rhythm and muscular agreement. As the child grows the co-ordinating powers are educated. When he first wills to walk, he falls. It is only after many trials and repeated failures that he is able to maintain a position of equilibrium above his feet.

Think what a difference there is between such manifestations and those of the acrobat or bare-back rider in Barnum's circus. What a difference even between the movements of the ordinary pedestrian and the first attempts of his babyhood.

Listen to the ceaseless tread of the great human army marching to and fro on our streets; watch the daily panorama of complex activities that moves before your eyes. Stand and wonder and admire the strength and the precision, the grace and the beauty of movement, that join and flow from the fountains of co-ordination!

But the chief glory of the human organism is not found till we climb beyond nerve and cord, medulla and cerebellum, to the gray matter of the cerebral convolutions. Here dwells the king. Here in this mysterious chamber are wrought the still but mighty works of intellect, affection, and will.

Other animals may be immeasurably superior to man in bone and muscle, superior in certain co-ordinations; they may have finer organs of special sense; but in the one thing of cerebral gray matter, the organ of thought and reverence and benevolence and will, he stands superior on the earth; he has "dominion over all." *Ill. Trans.*

UNDERLYING PRINCIPLES OF MANIFESTATIONS OF NERVOUS ENERGY.

DR. GARRETT NEWKIRK, CHICAGO.

I presume we have all often asked ourselves, What is the underlying principle of this transmission of nervous energy, motion, or sensation? What is it that travels along the nerve? Does anything really travel? We have heard of ethereal fluid, nervous fluid, electric fluid,—an intangible, indefinable something supposed to whirl along the nervous lines like a cash-ball on the track in a modern retail store. Is there any such thing? All these operations proceed on the principle of contact. It is entirely a matter of touch.

The sensitive cell is simply the ultimate cell,—the exterior of a series of cells,—the extreme end of a nerve-filament. The first cell being touched, touches the second, the second the third, the third the fourth, and so on till the final cell is reached. This is the process though all is done in an inconceivably short time; and you may call it touch, vibration, or modified tension—as you please to name it.

Suppose you could have a man stand out before you, and then, by a word, annihilate or throw off absolutely everything of him except his nervous system. What would he look like? The form of the whole man would be there, less hair and nails. He would be a very nervous man, to be sure, but he would demonstrate most clearly the perfect diffusion yet unity of nerve-tissue. You might be able to see that the nerve-filaments are but fingers,—millions of microscopic fingers,—reaching out to touch the things in which the brain and cord have an interest. Touch the periphery anywhere, and you touch the center, the other extremity. It is all on the principle of contact of atoms and the *communion of substance*.

Our knowledge of the telephone may assist our idea. Two vibratory membranes are connected by a wire. So we have in contact—air, membrane, wire, membrane, air. The man at one end sets the air in motion, producing sounds with his vocal organs, varying in intensity and number so as to constitute what we call speech. The man touches the air, the air the membrane, the membrane the wire, the wire the membrane, and this again the air; and the air touches the other man,—his ear. So by these media the two men touch each other. The one makes impression on the other by certain nicely adjusted movements which he has been educated to make. The other understands the movements because he has been similarly educated both to make and to perceive. It is a mode of motion.

The world is under tremendous pressure. There is tension everywhere. Every object in some way, directly or indirectly, touches every other object. But by the isolation of certain lines of atoms, as

in the telephone and telegraph wires, we are able to control and utilize the *sensitiveness of matter* in a definite way, and for a definite purpose.

So our nerves are merely isolated lines of atoms. The terminal sensitive cell touches the central, and the central in turn touches the lines of atoms that provoke contractil energy. And so we have sensation; and so we have motion.—*III. Trans.*

LABORATORY HINTS.

DR. L. P. HASKELL, CHICAGO.

After grinding the ends of teeth, sand-paper them, as it makes them smoother.

For polishing gold and other metals, drive a piece of pine into a lathe chuck, and then turn it to a point, with a pocket knife. It is excellent for finishing backings and the palatal surfaces of gold plates.

Use small sized, soft brushes for polishing, as they retain the polishing material, coarse ones throwing it off.

An acid dish made of thick sheet lead is superior to any other for sulphuric acid, which is the only acid needed for metal plates. It can be easily formed with a mallet, over a wood form made for the purpose. Cut the lead so that a handle can be left on one side.

In soldering, have the plate clean, use plenty of borax, cut the solder in small pieces, and heat the whole plate, so that plate and backing shall be of uniform temperature before concentrating the heat on the solder. The melting point of the solder should be near that of the plate, otherwise before the plate is hot enough the solder melts, and rolls away from where it is laid.

Never use a lower carat than 18, even if your plate is 18.

There is no necessity at all for riveting pins; countersink the hole and if it is a little larger than the pin the better, and then the solder flows into it around the pin, whereas if the pin is riveted, the solder is prevented from flowing round it.

I prefer imesting the teeth as arranged on the plate, and then backing, as it saves one heating and considerable time. I round the end of the backing instead of making itsquare, and chamfer the edges.

After annealing a plate drop it into the acid, the surface being cleaned, you can see any base metal that may adhere in swaging.

There is such a thing as over-swaging a plate to be guarded against.

What a pity every young man who enters a dental college cannot be compelled to show a diploma from some school or college, and give some evidence that he will not be a drawback to the profession by being a blockhead and an ignoramus. Dentistry would certainly take a rise.—*E. H. Raffensperger, Marion, Ohio.*

TREATING AN EXPOSED PULP.

DR. W. H. ATKINSON, NEW YORK.

If the pulp is sufficiently exposed, we can very readily see whether there is a drop of pus formed at the point of exposure. If there is, the character of that is almost certain to be a favorable indication of saving the pulp. Remove the pus and then apply almost any of the carbo-hydrates. My preference is the saturated solution of salicylic acid. Then dress it with a little sandarac varnish, pretty well dried down, so as to keep out food and all foreign substances. The next day you will see at once whether the inflammatory action has been arrested. If pus has been formed and you get a drop of pus, it is next to certain that there will be proteinaceous coagulum, and that will make the very best kind of nature's dressing, so as to enable you to cover it up. How would you cover it? A little oxid of zinc mixt into a paste with half creosote and half oil of cloves applied first; then oxy-phosphate of zinc overing that, and instruct the patient to come the next day if uneasiness occurs; if free from pain or uneasiness, the patient need not come for a week. Let it go for some time till satisfied of the extinction of the mischief. If there should be any trouble it is easy to take out the oxy-phosphate filling and re-dress, but never destroy a pulp for that. I know of but one excuse for destroying a pulp, and that is when pulp stones are attached to the sides of the pulp chamber and you cannot take them out. The first pulp I have destroyed in the city of New York has occurred within three weeks, and that was my excuse for doing it. It was in a left superior third molar. I put in arsenic, and extirpated the body of the pulp with the pulp stone.

Where the pulp is a little exposed and there is considerable inflammation, but no drop of pus, I bleed it. The first step to relieve congestion is to excise the exposed part and let it bleed freely. Don't kill the pulp for the sake of having a funeral, but for humanity's sake, give the little fellow a chance to live. If it dies, then bury or cremate it. But I lose few exposed pulps.

When I was keeping percentages, it was so high that almost everybody said I exaggerated. I do not think one per cent failed. I think a pulp that is congested is capable of being preserved. My reason is this: whenever congestion is carried to the point of transudation of pabulum or of blood, there is a variable arrest of the circulation that needs relief, and when that is responded to, and the other portions are sufficiently fluid to keep up their wonted circulation round these little ponds or lakes—they are like varicose veins—then cut that out, and it recuperates itself by simple treatment.

THE RETENTION OF DEAD TEETH IN THE JAW.

DR. HOMER JUDD, ILLINOIS.

An enormously large number of dead teeth and roots are now saved by the dentists. They are filled, crowned, and bridge-work is built on them. The time has come when people have an exaggerated opinion of the abilities of the dentist. Some practitioners foster this idea by asserting that they never extract teeth. Every pulpless tooth is in an abnormal condition. The most favorable cases for the retention of dead teeth or roots are when, with a good constitution and good teeth, one of them is devitalized and properly treated and filled. In such a case the cicatrix at the foramen is too small to give trouble. Such a tooth in such a mouth will be thoroughly innocuous.

The Medical Record once suggested that physicians might find it necessary to order dentists to remove dead teeth. The physician cannot from his own knowledge designate any such. He does not know the condition or symptoms. The common cause for unsuccessful treatment of dead teeth is imperfect and faulty manipulation, and the difficulty in determining the exact condition without resorting to extraction. A chronic state of pericementiti may result from the last point of the root remaining unfilled, and this in time may make an impression on the general health. Another difficulty may rise from the calcification of pulps previous to devitalization, and this may prevent the perfect filling of root canals. Another source of irritation may be the naturally sharp point of the root. A long continued abscess may bring about this condition, and there may be rough nodules and calculi. Large pulps, in decomposing, may destroy the dentine to so great an extent as to make the whole tooth a source of irritation.

The first indication of disturbance from a dead tooth is usually at the apex. Pain may be caused in almost any tissue, from reflex disturbances rising from a dead tooth. Eye, ear, stomach, and uterus are especially liable, though it may be that this frequency is only apparent because it is more easily recognized. Toothache may also rise from diseased eyes, ears, etc. It is not surprising, then, that eye and ear surgeons are quick to recognize disturbances from the teeth. Their observations should be intelligently made, for frequently some aural disturbance is attributed to a tooth, when extraction does not prove a cure.

In continued alveolar abscess the formation of pus is the most alarming symptom, as it will, in some cases, produce serious drainage to the system. There is much in the constitutional condition which governs the state of dead teeth in the mouth. With some patients abscess is almost certain to follow devitalization, with others it rarely occurs. Abscesses sometimes open into the nares or antrum, and

retention is incompatible with a state of health. The retention or extraction of dead teeth must be determined like any other surgical operation. The circumstances and probable danger must decide the question.—*Independent Practitioner.*

Cohesive Gold.—There was a time when we had no cohesive gold foil. Occasionally a gold-beater would, by over-refining his gold, produce a “sticky” gold, as he termed it, regarding it as a misfortune. Not till Dr. A. J. Watts and myself were engaged, some thirty-two years ago, in experimenting for the purpose of developing crystal gold, was it known that it is one of the inherent and peculiar characteristics of gold that when it is reduced to a state of absolute purity it is cohesive. This we found invariably to be the case, absolute purity only insuring the highest degree of cohesiveness. It must not only be chemically pure, but electrically pure, which we gained by a species of electrolysis. Having gained this absolute standard of purity and cohesiveness, we had a basis of action, so to speak, from which we could manufacture foil of any degree of cohesiveness or non-cohesiveness by alloying with metals or by other methods. That was the first time a systematic method of producing cohesive foil was known. The cohesiveness of foil already made may be reduced in many ways. Coating it with ammonia is a method which is new to me to-night; but there are many others that answer as well. Time and exposure will do it as well as anything. But there is no doubt, and I feel that all the older operators will justify me in the declaration, that so far as gold foil is concerned there is no better material for filling teeth than soft, velvety, kid-like gold. Its softness and malleability, and *manipulatability*, to coin a word for the occasion, render it adaptable to the walls of the cavity as nothing else will. The use of cohesive gold foil is very desirable, as we know, but we have to use it with great care or it will kink and form arches and lattice-work, which impairs its integrity. But when used as a supplement to other forms of gold, there is no doubt of its excellence.—*Dr. Dwinelle, of New York.*

Dead Teeth.—One of the difficulties in the way of saving pulpless teeth is that it is impossible to reach perfection in the filling of roots. Many imperfections escape notice, many are inherent in the tooth, and yet the cases are measurably successful. When we seek for underlying principles, there is little analogy with general surgery. All practice is more or less empirical. When it becomes scientific it is because of empirical experimentation. The argument that has been made by medical men would direct that all dead teeth should be extracted for fear of possible bad results, because evil consequences have been obser-

ved from the keeping of diseased teeth in the mouth. Such arguments simply point out the ignorance of medical men as to the possibility of treating diseased teeth and restoring them to healthfulness. The instances of the obliteration of tooth-pulps, are strong arguments in favor of the possibility of keeping dead teeth, provided they are in an aseptic condition. We must rely on the tendency of the body to tolerate abnormal conditions. General surgery is founded on this toleration and adaptability to the human tissues. They are depraved conditions under which the simplest lesions become fatal, but because this is the case we are by no means at liberty to conclude that no surgical operations are warranted. Even though some dead teeth are provocative of trouble, it does not follow that dentists should not treat and fill teeth with devitalized pulps.—*Dr. Cushing.*

In preparing proximal cavities in bicuspid and molars we open well from the grinding surface, so that we have free access to every part of the cavity, cutting the palatal and buccal borders away, so that when they are filled they will be perfectly free, dressing them down smooth, and beveling the edges slightly, putting one or two very small retaining pits at the base. Where the teeth are badly broken down so that the beveled edges are not sufficient to retain the gold, we cut grooves, the same as for the incisors. However thorough the cavity is prepared and perfectly the gold be packed and finished, if the teeth are allowed to return to their former condition of contact, our work will be lost: for we can not secure permanent exemption from decay, unless an entire changed condition is produced, either by contours or nuckels of gold in such a way that the spaces are self-cleansing or so that they admit of easy cleansing.—*F. M. Hamsher.*

Origin of Thought.—The question as to whether the gray matter of the brain originates thoughts or not is purely a physiological question. If in the discussion of this question we impinge on the domain of psychology, it is because these gray corpuscles of the brain seem to stand on the limits of the two worlds. Impressions from without are transmitted to them through nerve filaments which result in changes, and impressions reach them from the mind which produce changes with corresponding results in both cases, so that it seems as if here was the very door through which communication was established between mind and matter. These considerations enhance to a great extent the interest which attaches to the study of this portion of the nervous system; not only as to the origin of thought, but what are the processes of its growth.—*H. Judd.*

PREJUDICE AGAINST THE RUBBER DAM.

DR. G. W. ADAMS, BRISTOL, PA.

•Three or four years ago an intelligent lady came into my office to have some teeth filled. She desired them filled with gold; but would not submit to the use of the rubber dam on any consideration. I protested against her prejudice and obstinacy, and plead and coaxed without avail to get her to submit to its application. I finally told her she must be responsible for whatever demerits the operations should possess, if I failed *on her account*, to do first-class work. To this she readily assented, and her teeth were filled with gold in the best manner that I could do it under the circumstances. In course of time a proximal filling in one of the bicuspid loosened and came out. She neglected to have it replaced till the walls of the cavity had become so thin and frail, that a plastic filling was indicated. After excavating the principal part of the caries, I picked up a small sheet of rubber dam, punched three small holes in it, and without any questions or ceremony I slipped it over the three teeth I wanted to expose. And while I was tying threads around the teeth she asked me if I was "going to use the dam?" I told her I was. "Oh! no, I can't submit to that for anything." I said—"just hold still a little bit, and I won't hurt you." "But you ain't going to put that great big long thing in my mouth are you? For I *never* can bear that." I quieted her excited imagination by telling her "the worst was over—that no big long thing was to be used—this bit of rubber cloth was all there was of it, and it simply had two or three holes in it for the teeth to stick through so the water cannot get into the cavity." She became passive, and the tooth was filled with flint cement without further fuss or trouble. I found she did not know what the "rubber dam" was. Fisk's saliva ejector was the terrible bugaboo!

 HAVE MERCY ON THEM.

There is a class of people in this country who get up at 5 o'clock in the morning, and who never get back to bed till 10 or 11 o'clock at night; who work without ceasing the whole of that time, and receive no other emolument than food and the plainest clothing; they understand something of every branch of economy and labor, from finance to cooking; tho harast by a hundred responsibilities, tho driven and worried, tho reproacht and lookt down on, they never revolt, and they cannot organize for their own protection. Not even sickness releases them from their posts. No sacrifice is deemd too great for them to make, and no incompetency in any branch of their work is excused. No essays, or books, or poems are written in tribute to their steadfastness. They die in the harness, and are supplanted as quickly as may be. These are the housekeeping wives of laboring men.—*Exchange.*

REPLANTING IN RIGG'S DISEASE.

DR. B. E. MEAD, GREENWICH, CONN.

Three years ago a maiden lady aged 45, came to have one of her lower centrals taken out. It was so loose it could not stand alone. I saw there were four others soon to follow unless something was done immediately. It was a case of Rigg's disease. As I have not always had satisfactory results from Dr. Rigg's method I thought I would try some other. I extracted the five, cleaned them of all tartar, was careful not to destroy the periosteum (what little there was), washed the gums first with Chlorid Zinc solution, then with Carbolic Acid, 10 drops to half tumbler of water, placed them all back and lashed them with floss silk. I was looking them over the other day, and I am better satisfied than with any other treatment I have ever tried for so helpless a case as that was. I did not succeed with the tooth that could not stand alone when I commenced, but the others did well.

I have watched Dr. Mills of Brooklyn operate for similar trouble. He produced more bleeding, took more time, and I think caused more suffering.

What prompted me to my heroic treatment was that I have had pretty good success in transplanting one rooted abscessed teeth.

I do not wish to be understood as disapproving of Dr. Rigg's or Dr. Mill's method, but I do think there are many cases in which a little deviation from the old beaten path is good.

Formation of Pulp Stones.—There is a general impression that secondary deposits are the cause of pain, and, when dentists have diagnosed pulp stones, they think the cause of the trouble is ascertained ; but my observation leads me to question whether they have anything to do with producing such results. They are rather the sequence of the condition that produces the pain, and may be considered harmless.

The cause of the formation of secondary deposits is abnormal stimulation of the pulp, be it abrasions, fractures, the presence of fillings, or other local irritation of a mild type. This stimulation excites the odontoblasts to resume, in an imperfect way, their original function of dentine formation, and as the new material is laid down at the point of irritation, the pulp becomes just so much the smaller, this process being the same as in that of the original formation of the dentine.

In interstitial calcifications—the formation of pulp-stones—the process is much the same ; the formation of the stones being only the calcification of so much pulp-tissue, and consequently there would be no pressure on the pulp from the stone.—*W. W. Allport.*

HEREDITY.

DR. S. D. ROBERTSON, CHICAGO.

Since that divine proclamation was uttered, no other fact in history has been more positively verified or more generally conceded by all classes regardless of religious belief, than that the "iniquities of the fathers are visited on the children unto the third and fourth generations."

The term "heredity" implies certain physical or mental qualities transmissible from parent to offspring, or, "heredity is that biological law by which all beings endowed with life tend to repeat themselves in their descendants; it is for the species what personal identity is for the individual."

In starting out on a subject so broad and deep, embracing the preservation of material form, whether animal or vegetable, and the preservation of function with which all organisms are endowed, the aim will be to avoid hypotheses, in which volumes on heredity so richly abound, and dwell on facts of common observation. That "like begets like," is, as true to-day as it was six thousand years ago, but, to say "like by like" with mathematical precision is to interfere with the latitude granted this law, in which may obtain improvement or degeneration.

While ignorance is said to be bliss under certain circumstances, to be ignorant on a subject of such vast import as this, affecting the health, lives and happiness of those who now live, and reaching forward to unborn millions, how great must be the responsibility and accountability. Those who have never informed themselves on hereditary transmission will marvel when they comprehend the wonderful features and divers phases it presents. If men would give as much attention to the laws of hereditary transmission in their own race, as they bestow on the propagation of many of the domestic animals the human family would be immeasurably advanced intellectually, physically, and morally. That individuals and species having advantages in vigor, agility or better adaptation to surrounding circumstances, will live and reproduce themselves, while those less favored will perish, is universally known. This sorting process Darwin calls, "Natural Selection," Huxley, "The Survival of the Fittest."

The relative influence which each parent exerts over their progeny as to the qualities transmitted to them is not definitely known. The grand structure of the body, the degree of development of the bones and muscles, the tendency to obesity or the opposite, seem to depend as frequently on one parent as the other in the human family; but in the brute creation—the horse for example—the male most frequently determines the general form and size of the body.

However plausible the doctrine of crossing the races may have been, it is now pretty generally conceded that the highest degree of vigor may be attained by the concentration of the energetic races. It is proven that the blood of all races can not be blended with impunity—as degradation will follow. There must be a strong sympathy in order to be successful though seemingly opposed.

The progeny of the strong and perfect resulting from a union with the weak and inferior will be but of an ordinary quality; while that resulting from a union of strength and perfection on both sides, will be a concentration of vigor and genius. This principle is understood and practised in breeding and rearing horses. The famous race horse Eclipse, was produced by a successive union of the accumulated blood of a pure strain unimpaired by combining. Horsemen will advocate that they wish to concentrate a certain strain or pedigree that will predominate and give to the horse those qualities which they desire. Hence you will hear them say, “My horse is bred so and so, sired by such a horse, his dam is lady so and so, she by so and so, 2d dam the famous trotter so and so, she by so and so, he by so and so, and *he* by imported messenger 3rd dam thorough hiltred.

There is once in a great while an individual who takes pride in tracing back and keeping a correct record of his or her family lineage. I know of one such person who can give you not only the original stock she descended from, but also the Christian names of each succeeding generation from the landing of the Pilgrim fathers down to the present.

By referring to the family record in the old family bible, some of us may learn the names of our grandparents on either side but as a rule what do we know or care about the qualities or pedigree back of them, unless for the purpose of proving some title of original inheritance, then we are anxious to know *all* about it? I can conceive of cases, however, wherein it would be an advantage to the progeny to know as little of the qualification of their ancestors as possible and *vice versa*. Sometimes the complexion of the two parents appears unattenuated in the offspring, but from observation it is believed that in the progeny resulting from a union of the ebony and the white races the color of the father predominates over that of the mother.—*Dental Register*.

Talking about busy men who leave their homes early and get back after dark and never see their children, a man of that sort was hurrying away one morning when he found that his little boy had got up before him, and was playing on the sidewalk. He told the child to go in. Child wouldn't. Man spanked him and went to his business. Child went in howling. The mother said: “What's the matter?” “Man hit me,” blubbered the youngster. “What man?” “That man that stays here on Sundays.”

THE COMPOSITION OF A TOOTH.

DR. F. M. HAMSHER, OF INDIANA.

The dentine is the larger portion of the tooth structure. In density it ranks next to enamel. It contains seventy-two per cent organic or animal substance, the remaining twenty-eight per cent is principally lime. In structure the dentine consists of an infinite number of tubes and inter-tubular substance, which is dense and granular.

The tubes are wavy in their course, extending from the periphery or outer border of the dentine to the pulp-chamber, averaging one-tenthousandth of an inch in diameter. They sometimes divide in their course, anastomosing with each other and with the connecting canals called canaliculi of the cement.

From the pulp, along the tubes, pass fibrils, which perform the function of nerves; and like them, are most sensitive at their peripheral or outer terminations.

There are also transmitted nutrient fluids, which supply both the organic and inorganic substances.

The inter-tubular substance consists of fine granules; is transparent, and forms the bond of union of the tubes.

The enamel is the harder portion and contains the smaller part of organic substance. It is composed of hexagonal rods or prisms, radiating in a direction parallel with the tubes. They are so adapted and fitted together that there is scarcely any space between them. The office of enamel is to cover and protect the tooth, and a tooth that is robbed of this protection in any way will soon succumb to the influence of destructive agents. By the structural arrangement of the prisms that the greatest possible strength and power of resistance are attained.**F. M. Hamsher.*

Sensitive Dentine.—What we want to accomplish is to reduce the dentine on which we operate to a painless condition or to that of a dry bone. I treat nearly all cases with most satisfaction by mechanical means: by adjusting the rubber dam and packing the cavity with bibulous paper and the frequent application of the hot air syringe, which produces slight pain. Let the patient rest a few minutes before applying the instrument to the cavity, then with a sharp excavator or bur, a commencement can be made. If the moist dentine is again approached, pain will result; then I repack with bibulous paper or any good absorbent. After the first pain (caused no doubt by the capillary attraction on the tubuli) is past, it grows less with each application. Continue drying and excavating alternately till the cavity is thoroughly prepared.—*W. N. Morrison, in Archives.*

Covering this enamel is "the skin of the teeth," Job speaks of. This is an extremely hard transparent, glossy protection of the enamel, which should never be damaged by scraping the teeth, or by using very strong acids.—*Ed. Items.*

WILSON'S "PLASTIC GOLD."

In the "ITEMS OF INTEREST," June number page 332 appears an advertisement under the head of "Plastic Gold," signed L. B. Wilson & Co., which quotes "Trial Packages \$2.00, Full Packages \$4.00." It does not state the amount contained in a package, but any one would expect to get full value for his money.

Reading the ad' induced me to send \$2.00 for a "trial package." I received *just six grains* "Plastic Gold" which is only $\frac{1}{10}$ the amount contained in an ordinary package $\frac{1}{8}$ oz. of any gold foil; or $\frac{1}{8}$ as much as contained in Welch's \$3.00 package. Or in other words the "Plastic Gold" cost *eight times* more than Welch's (or any other) gold foil. It cost at the rate of \$160.00 per oz., while the best gold foil costs only \$28.00 per oz. I have often heard of three card monte men, but this is a new game, and I didn't see the "wolf" till I had been bitten. I write this that those of your readers who have not already been "taken in," may pay their money and take their choice.

Pierre, Dak.

W. B. STEERE, M. D.

The International Medical Congress.—Whatever may be the fate of the Dental and Oral Section of the Congress, it seems more than probable that a most influential meeting will take place in 1887. We heard of names as likely to hold office which must insure the respect and wide support of English surgeons and physicians. It will be a sad miscarriage if American dentists allow internecine conflicts to mar the chance of promoting a brilliant and effective dental section. Whatever may be said, there is no doubt that in Britain the medical and dental professions are so allied in interests and pursuits that the English dentists will be much more disposed to go over to America to attend a Dental Section of an International Medical Congress than they would be to put themselves out of the way to appear at an International Dental Congress. The Medical Congresses are *faits accomplis*, not so the Dental, at least in the eyes of the dental profession in England, so if we are to take part in the meetings of American dentists it will have to be at the Medical Congress. Many dentists will go across whether there is a section or not, and will attend the Medical Congress. We will therefore trust that Dr. Taft's circular will carry out its assurances, and we may all meet and compare notes before a brilliant Dental and Oral Section of the Ninth International Medical Congress. Such there certainly could be.—*British Journal of Dental Science*.

However healthy the mouth, tie a string around a tooth and tartar will form. Moral: Keep the teeth clean.—DR. MCKELLOPS.

AMERICAN DENTAL ASSOCIATION, NIAGARA FALLS, 1886.

[Reported for ITEMS OF INTEREST by Mrs. M. W. J.]

The American Dental Association was called to order for its twenty-sixth annual session, 11 A. M., Tuesday Aug. 3d, 1886; the President, Dr. W. C. Barrett in the chair.

OFFICERS.

President, W. C. Barrett, Buffalo, N. Y.; First Vice President, L. C. Ingersoll, Keokuk, Iowa; Second Vice President, N. T. Smith, Minneapolis; Recording Secretary, Geo. H. Cushing, Chicago; Corresponding Secretary, S. W. Harlan, Chicago; Treasurer, Geo. W. Keely, Oxford, Ohio.

The roll-call showed one hundred and four members in attendance at the first morning session.

At the last annual meeting resolutions were offered for certain amendments to the Constitution. These were called up as the first items of miscellaneous business.

An amendment to Article IV, changing the time of meeting from the first to the fourth Tuesday in August, was laid on the table. The consideration of the resolution for a further amendment to the same Article, leaving the choice of place of meeting permanently in the hands of the executive committee was indefinitely postponed.

Article VI, Sec. 2, was, after some discussion by Drs. A. H. Thompson, Dorrance, Fillebrown, Truman, Crouse, Marshall, Cushing, Allport and others, so amended, (by resolution offered by Dr. A. H. Thompson of Topeka,) as to permit members to join different sections, instead of being restricted to one.

The Treasurer reported cash on hand, \$2619.70, a most gratifying showing.

THE PRESIDENT'S ANNUAL ADDRESS

Was a model paper in this line, avoiding alike scientific dissertation and mere commonplace, with no discussion of parliamentary usages, amendments to the constitution or suggestions of by-laws, counseling the members to avoid all discussion of technical trivialities, to eschew dental politics, to disdain rhetorical pyrotechnics, devoting their time and talents to scientific problems and broad scholarly work which should do honor to them as representative men.

The Report of Section 1:—

PROSTHETIC DENTISTRY, CHEMISTRY AND METALLURGY.

Read by the Secretary, Dr. W. B. Ames, called attention to the many improvements made during the year in carved porcelain blocks; in small furnaces leading to the more general use of continuous gum work; in crown and bridge work; in matrices and separators; in

methods of removable bridge work, especially by Drs. Stockton and Swasey ; to the methods of Dr. Melotte, by whom clinics were given ; to a new material for taking impressions, composed of potter's clay and glycerin ; to a new fusible metal compound of bismuth 16, tin 11, and lead 6, parts ; to an alloy for solder, given by Dr. Dorrance, made of chemically pure metals, in the proportion of silver 1, zinc 2, and copper 3 parts, making a remarkably white alloy, used in proportion of 1 part of this alloy to from 2 to 6 parts scrap gold.

The papers read from this Section :

IMPROVEMENTS IN VULCANIZING AND VULCANIZERS,

by Dr. Wm. Truman. set forth the principles involved in vulcanizing and the advantages of the New Mode Heater, and Seabury Vulcanizer.

Dr. L. P. Haskell read a paper on

NEEDED IMPROVEMENTS IN MINERAL TEETH,

in size, shape, color, and style, showing the great difficulty experienced, specially in matching the natural teeth for partial plates. He commended Ash's English teeth as being the best in all these respects ; also in the quality and thickness of the enamel, and the dentistry of the body, which admits of altering the shape by grinding, without giving a soiled, dinky appearance.

Dr. Dorrance read a paper in continuation of a former report, giving the results of extended observations as to the injurious effects of plates of the vegetable bases which he finds marked in 55 per cent of the very large number of cases which he has studied and tabulated.

The discussion of this subject failed to elicit anything new ; in fact, Dr. Wm. H. Morgan pronounced it only a rehash of what had been repeated for years, as to the elimination of heat by the mucous membrane, the effects of the coloring matter in red rubber, the results of uncleanness, of ill-fitting plates, etc.

Dr. W. H. Truman, thought the profession was going too far and too fast in

THE INSERTION OF BRIDGE WORK,

infringing on and torturing the sensitive peridental membrane, and loosening and destroying teeth, violating physiological law, and inducing pathological conditions which they could not control.

Dr. Wm. H. Atkinson considered bridge work the *ne plus ultra* of replacement, and that the peridental membrane was not tender or sensitive, connective tissue bearing more abuse than any other in the body.

FRATERNITY.

By motion of Dr. Rehwinkel a telegram of fraternal greetings was sent to the Central German Association of Dentists, now in session.

On motion of Prof. Taft, Dr. Geo. H. Cushing, in response to a

communication received, was authorized to send a set of volumes of Transactions to the Library of the Patent office, Chancery Buildings, London, for the benefit of two hundred daily readers,—men interested in scientific inventions and patents.

Between the sessions appliances were exhibited and clinics were given at the rooms of the operators in the hotels, and various other places of which your reporter was not able to obtain any definite information. Dental manufacturies and dental depots were well represented. The S. S. White Co. displayed everything pertaining to dental science. The Buffalo Dental Manufacturing Co. exhibited a very complete line, especially their great variety of gas heating apparatus for every conceivable purpose. Their Asbestos heater is especially attractive. The Florence Co. had a large display, especially of their prophylactic tooth brushes and dental plate brushes, both admirably adapted to the ends proposed. Among other exhibitors were the Welch Dental Co. with a fine display of English teeth. H. D. Justi and Gideon Sibley, American teeth; C. A. Timme & Co., Hoboken, gold foils and cements; Seabury & Johnson, N. Y., dressings and absorbents; and possibly others which your reporter failed to see.

Second day, the Committee on Credentials was called on to report.

ORGANIZATIONS REPRESENTED.

Illinois State Dental Society; California Odontological Society; Dental Department of the University of California; Chicago Dental Society; Michigan State Dental Association; Mississippi Valley Dental Society; Odontological Society of Pennsylvania; Sixth Dental Society of New York; Chicago Dental Club; Connecticut Valley Dental Association; First District Dental Society of New York; Louisiana State Dental Society; Iowa State Dental Society; Brooklyn Dental Society; Eighth District Dental Society of New York; Minnesota Hospital Dental College; Georgia State Dental Society; Odontological Society Western Pennsylvania; Pennsylvania State Dental Society; Indiana State Dental Association; State University of Iowa Dental Department; North Western Dental Association; New Orleans Odontological Society; Pittsburg Dental Association.

On motion of Dr. Haskell of Chicago, this report was accepted and adopted, the delegates thereby becoming members of the Association for the present meeting, with all the privileges thereof. Dr. Baedecker then introduced to the Association, the celebrated

DR. WILHELM HERBST, OF BERLIN,

who was welcomed with hearty applause. This representative of German dentistry is visiting this country for the purpose of giving to the profession his recently perfected method of filling teeth with gold,

by a system of rotary pressure, rubbing the gold against the walls of the cavity, instead of hammering it in with a mallet, or the old system of hand pressure.

This system, which is known as the "Herbst Method," is the utilization of a new principle in operative dentistry, and has been experimentally tried in this country for the last two years, but has never been thoroughly understood or appreciated till its present demonstration by Prof. Herbst himself. He calls this system his "baby," and says "I have brought my baby to this country to show it to you; if you don't like it I will drown it."

Dr. Wm. H. Atkinson moved that Dr. Wilhelm Herbst be made an honorary member of the American Dental Association by acclamation. The rising vote was unanimous. Prof. Herbst speaking in German, which was translated, phrase by phrase by Dr. Baedeker, briefly expressed his appreciation of the hearty welcome tendered him which he said he was too much moved to express in words.

Dr. Crouse then introduced Dr. Bryant of Switzerland, and several members of the profession from Canada, to all of whom the privileges of debate were tendered.

Dr. Watkins of Montclair offered a vote of thanks to Prof. Baedeker, to whose efforts the profession owes the visit to this country of Dr. Herbst.

The motion was put by the President, who said that any man who could come from abroad to teach Americans one point in dentistry was most especially welcome.

The discussion of Section I, Prosthetic dentistry was continued by Drs. Orton, John Allen, Kingsley, Land, Crouse, Brophy, Darby, Melotte, Morgan, McKellops, Parmly Brown, Taft and Fillebrown.

The subject of the injurious effect on the mouth and system produced by the use of red rubber, or vulcanite plates, was discussed at considerable length, the effect so universally recognized being attributed by some to the non-conducting properties of the vegetable base, by others to the poisonous character of the compound, of which 36 parts in the mass is red sulphide of mercury, 24 parts sulphur, only 48 parts being rubber. Others attributed the trouble to uncleanness on the part of the wearers; others, again to the roughness, or to mechanical injury produced by ill-fitting badly made plates.

As usual when this subject is discussed, no conclusion was reached, beyond the undoubted fact of the injurious effects of the material in a large majority of cases.

The Report of Section II being called for Dr. Brophy asked unanimous consent to call Section IV, that Dr. Herbst might lay before the Association his method. This was given with applause.

OPERATIVE DENTISTRY.

The report of the Section was read by the chairman, Dr. E. T. Darby. The report embodied a review of progress made in operative dentistry in the last quarter of a century, especially in the character of the gold used: in the use of the mallet—hand, mechanical and electric; in the successful conservation of exposed pulps; in the use of other materials than gold for saving teeth that were formerly condemned to the forceps; in the invention of the rubber dam; in the dental engine; in the restoration of contour; and many other points.

There was some discussion as to whether crown-work, and bridge-work properly, pertain to prosthetic or to operative dentistry, the prevailing opinion being that it pertained about equally to both, the treatment of the roots of the teeth being essentially a part of operative and therapeutic dentistry, the manufacture of gold crowns and bridge-work being purely mechanical though highly artistic.

The report was adopted.

DR. HERBST'S ADDRESS.

Dr. Herbst was invited to address the Association; his remarks were translated by Dr. Baedeker. He described fully his methods of work, and the principles on which it is based, and its superior advantages in the points of weight of gold inserted, close adaptation to the walls of the cavity, the perfect union of the different layers of gold, one with the other, and the great saving of time required for the operation. He said that he would much rather show them than tell them how to do it, it would be far more satisfactory. The superiority of this method is seen, by filling glass tubes, and immersing in aniline or carmine solutions, where not the slightest percolation will take place. He gave the Association his

VALUABLE OBTUNDER FOR SENSITIVE DENTINE.

Namely, sulphuric acid 1 dram, crystals cocaine 30 grains, which makes a saturated solution to which is added all the sulphuric ether it will take up, any superfluity of the latter being allowed to evaporate.

Prof. Taft spoke favorably of this obtunder, in his experience.

The sulphuric acid decomposes a portion of the calcareous elements of the dentine, leaving a deposit of sulphate of lime in the cavity. The cocaine and sulphuric ether neutralize the pain caused by the acid. The discussion was very interesting and prolonged till the hour of adjournment.

The *Scientific American* states that plush goods and all articles dyed with anilin colors, faded from exposure to light, will look as bright as ever after being sponged with chloroform.

SOUTHERN DENTAL ASSOCIATION.

EIGHTEENTH ANNUAL MEETING, NASHVILLE, TENN. JULY 1, 1886.

[Reported for ITEMS OF INTEREST by "Mrs. M. W. J."]

The Southern Dental Association held its Eighteenth Annual Meeting, beginning July 27th, in Nashville, Tenn.

The meeting was opened with Reading and Prayer, by Rev. J. D. Barker, of Nashville.

After the reading of the minutes of the last Annual Meeting, Dr. J. H. Prewite delivered an eloquent Address of Welcome, which was responded to in a most happy vein by Dr. G. H. Winkler, Augusta, Ga. He was followed by the venerable Dr. Wm. H. H. Thackston, Farmville, Va., the oldest living graduate in the profession, and the only survivor of the second class from Baltimore College. Dr. Thackston is a typical representative of "the old Virginia gentleman," stately and courteous, and his address was a polished specimen of refined eloquence.

THE ANNUAL ADDRESS

of the President was exceptionally fine, dealing with the question "Is Dentistry a Profession, or is it a Specialty of Medicine."

The Committee on Education presented three papers; one by Dr. B. H. Catching, Chairman of the Committee, one from Dr. M. C. Marshall, Little Rock, Ark., and one from Dr. W. Dunlap, Selma, Ala. A fourth paper from Prof. F. J. Gorgas, was received by mail, during the last session.

Dr. Catching in his paper on

EDUCATION

took the ground that dentistry has reached a stage when separate dental schools and a special degree are hindrances to further advancement; that distinction by eminent men in our profession has been attained only by persistent labor under great disadvantages. To attain its full sphere of usefulness, it is time to do away with all distinctions. The dentist of the future must first graduate from a medical college, and then from a dental infirmary, coming forth fully equipped to practice dentistry as a specialty of medicine.

Dr. Dunlap devoted his paper largely to a consideration of

THE ADVANTAGES OF THOROUGH OFFICE TRAINING

under competent preceptors in connection with college education. He regarded the latter as a process of stuffing, the former alternating with the sessions affording opportunity for digestion. The associations he regarded as the school of schools.

Dr. Marshall in his paper, dealt especially with the advantages in an educational point of view to be derived from

ASSOCIATED EFFORT

in elevating dentistry to the position which it is destined to attain. He considered that there was no demand for the large number of colleges now in existence. Professorships being valuable in proportion to the number of matriculates, the large number of colleges invites a feeling of competition for students and undue inducements are liable to be offered. Like the procrustian bedstead all are made to fit. The diploma is forthcoming, if the fee is ready. Chairs, if not profitable are liable to be filled, like our state legislatures, men of brains and ability rarely immolating themselves on the altar of their country. He suggested endowment as probably the only plan for securing the best results.

The discussion of this subject was long and animated ; in fact, quite heated at one time, in the debate between college professors and the advocates of the present college system on the other hand, and the advocates of more advanced methods and broader views on the other.

Drs. J. J. R. Patrick, Morgan, Catching, Salomon, Teague, McKellops, Wright, Thackston, Jas. Johnson, Crawford, Stubblefield and Adair took part in the discussion, which was continued in the morning session of the second day, when Dr. Morgan introduced Dr. Hubbard of

MEHARRY MEDICAL COLLEGE

for colored people. Dr. Hubbard spoke at some length in behalf of the institution, and especially of the dental department, which will open in October, bespeaking for their future graduates the same kind reception that the medical profession have granted their medical graduates, of whom sixty-two are now practicing in different parts of the United States.

Only one paper was offered by the Committee on Hygiene, by Dr. B. H. Teague, Aiken, S. C. on

THE PERSONAL HYGIENE OF THE DENTIST.

This was an excellent practical paper showing the almost inevitable injurious effects on the health of the modern dentist who is confined many hours of the day in over-heated, ill-ventilated rooms, living an unnatural life, creating abnormal conditions of stomach, liver, lungs, nerves, in fact, the entire system, with only a brief rest on the sofa, soothed by the fumes of a strong cigar ; the midnight oil burned while reading the journals, recording experiences, experimenting, composing, till the tension on the nerves prevents sleep and life becomes a burden.

How to prevent this deplorable result was the question of the paper, answered by wise counsels as to the wisest manner of life as regards personal habits, cleanliness, exercise, diet, rest, care of the eyes,

best light, proper position while at work, camp stool, arm rest, employment of motor for the dental engine, of assistants for selecting and putting away instruments, systematic appointments, and short sittings, and attending the Associations for change of scene and environment as much as for the information to be acquired.

The subject was fully discussed by Drs. Winkler, Teague, Richards, Adair, J. Hall Moore, Morgan, E. S. Chisholm, G. Chisholm, McKellops, Rembert, Wright, Wardlaw, Freeman and Thackston.

Another paper on the subject of Hygiene, from Dr. J. R. Woodly, Norfolk, Va., was received too late for reading, and referred to the Committee on Publication.

Dr. E. S. Chisholm presented a paper on

HISTOLOGY AND MICROSCOPY.

The etiology of the decay of human teeth furnished the first great cause for histological research to the dental practitioner. This implied a thorough understanding of first, physiological, and second pathological conditions, it being important to differentiate between these two conditions, and to know wherein consists the preventives, and the proper remedial agents for lesions already begun. The thorough understanding of histological conditions through microscopy affords proof, ocular demonstration, the only reliable source of evidence. Deprived of this we are as a ship at sea, without chart or compass, and yet even microscopical demonstration is not entirely satisfactory; though demonstrating the presence of microbes, it cannot demonstrate what part they play in the destruction of the tissues. The use of ambiguous terms which express no definite idea, is the cause of the slow progress toward the demonstration of truth. Neither science, nor reason in themselves, has ever discovered a truth since the world began. Demonstration is the witness, reason the judge, science the verdict.

(To be continued.)

It will bring us in many extra dollars, to keep an attractive office. Only a few days ago a lady paid me a compliment, by saying my "office did not look like an office; but more like a parlor." This is what we all should wish. Make the office look as little like an office as possible; keep all dental appliances out of sight. Many a timid patient has been frightened out of a dental office by seeing instruments lying about. Have plenty of bric-a-brac around to attract the patient's mind, as far as possible, from the operation. Cheerful reading matter, pictures, flowers, etc., all have a pleasing effect in that direction.—*E. H. Raffensperger, Marion, Ohio.*

EROSION.

IN THE NEW YORK ODONTOLOGICAL SOCIETY.

Dr. Dwinelle. Erosion of the teeth is a mystery to this day, tho the subject has been discussed a great deal during the whole of my professional life, and every now and then we have a sort of spasmodic way of reviving it. Our worthy friend, Dr. Darby, of Philadelphia, recently came over and read us a delightful paper on the subject. We fancied the problem was about to be solved. But he left us as he acknowledged, as much in doubt as ever. I had the opportunity of presenting a case at that time wherein cause and effect followed each other closely and conclusively. Erosion of the teeth is attributable to acid foods, and condiments, the astringent acids especially. But these acids are so quickly neutralized by the fluids of the mouth, which in a normal state are alkaline, that we cannot hold them responsible for all the destruction we see. I think it is a sufficient reply to Dr. Clowes's theory—and there is not a more honest man in the world, if he is a little cranky on this subject—to say that the worst cases of erosion ever known have occurred in the mouths of persons who *never* took a particle of muriate tincture of iron.

Dr. S. B. Palmer. I believe that the taking of iron often produces the constitutional changes referred to when given without an acid. Frequently during gestation there is an acid condition of the secretions. So we should not cast the blame wholly on physicians, nor trust to giving iron through a tube, if it is true that iron alone has the same effect in constitutionally changing the secretions.

Dr. Niles. There are many acids that will produce the effect of which Dr. Clowes speaks. The acid of the lemon, lime-juice, and common vinegar all produce the same effect on the teeth. I have had a case under my observation the past two weeks, where a physician gave the patient lemon-juice, and directed her to gargle the throat with it every half hour. That treatment was continued one week, when the teeth were pretty thoroughly softened. I learnt that the old physician had been in the habit of prescribing this treatment for sore throat for seventeen years. His attention was called to the injury he had done, and he not only denied that his gargle did this, but informed me that I was an alarmist and extremist. In reply the patient was instructed to immerse a tooth in lemon-juice, and after twenty-four hours take it to the physician. The experiment convinced him that he had been doing wrong for seventeen years. A simple alkaline wash would have neutralized the acid and avoided the whole trouble.—*Cosmos*.

Hydronaphthol gives promise of much usefulness as an antiseptic, a preservative, and a disinfectant. Write to Seabury & Johnson, New York, for a descriptive pamphlet. We think you will be pleased.

For Our Patients.

CARE OF THE TEETH.

DR. S. H. KING, LINCOLN, NEB.

Little has been written on the care of the teeth, and few dentists give their patients proper instruction. The question is often asked by the patient in the dentist's chair: "Why do people's teeth decay?" Such a question is pertinent; yet few will attempt to answer it in a brief, concise and intelligent way.

True, the question is often asked too late for the best answer to be of practical benefit to the inquirer, but often this class are parents, whose children would be benefited by the proper information. For it has been said, not in unbecoming zeal, by one of the leaders in dental practice, that "there is no necessity for man going down to the grave toothless, if the teeth are properly cared for from his early youth up." True, many of the weaknesses and deficiencies of these organs are to-day the inheritances of neglect of preceding generations.

It must be impressed on all, that *function* is an important factor, in the formation, development and efficiency of any organ. This law is not lost sight of by the pugilist, the sculler, baseballist, and other athletes. The duties required, the function to be performed by any organ, has much to do in qualifying it for duty.

The frail, degenerate condition of the teeth of civilized man is caused largely by the culinary art, and man's own neglect respecting them. Nature is not inclined to expend her forces in vain, and if mankind would have good, sound, enduring, serviceable teeth, he must give them something to endure—service to perform.

It is not physiological nor reasonable to expect children to have developed for them good teeth when they are fed entirely on soft-cooked, pulposus food which requires no service of the teeth. This law of functional demand and its fulfilment respecting the teeth was demonstrated to me when in the South, by observing that defective teeth were seldom found among the plantation darkies who had been raised principally on the hard corn-bread and hoe-cake—while those of the house servants, whose food was from the master's table, were no better than were the teeth of the master's family.

Therefore it is important that children should be provided with food which requires mastication—which gives good healthful exercise to the dental organs; these can be selected with reference to the child's taste or appetite. They should also be impressed with the importance of a thorough mastication of such food. Pop-corn and chewing gum give to children's teeth a healthful exercise.

The family dentist should be frequently consulted respecting the children's teeth. The temporary set often decay and give the young patient pain, when they should be properly treated and filled with a plastic filling, which will protect and preserve them till the proper time for their shedding. The retention of the deciduous teeth till nature requires their removal is often essential to the proper position or regularity of their successors—the permanent set. The thorough use of the brush should be taught, and its importance impressed on the mind early in life, so that the first permanent teeth may receive the benefit of such teaching. Not only the young but the middle-aged and old should allow no day to pass without a thorough use of the tooth-brush at least once, and if but once, the best time for its use is at night after the final meal or refreshments. This ensures their cleanliness during the hours of rest, when chemical decomposition is most active in the oral cavity. The manner of brushing the teeth is of no slight importance; this should be done longitudinally or lengthwise of the teeth, that is, brush the upper teeth downward and the lower teeth upward—in this way the bristles of the brush pass between the teeth and clean them where they most need it. This should not only be done on their outer surface next to the lips and cheek, but also on their inner surface—next to the tongue and palate. The toothpick is also an important instrument in taking proper care of the teeth; it should be brought into requisition after each meal, and a thorough use made of it in removing all particles of food or other foreign substance which may be lodged between them. The best toothpick yet invented is a quill from the wing of a goose, sharpened so as to readily pass between each tooth and its neighbor. The vigilant and thorough use of this simple little instrument would almost insure an average set of teeth from the ravages of decay. Too much importance has been laid on tooth-powders and washes; most of them are harmless and some beneficial. Precipitate of chalk is the principal ingredient of nearly all the powders and tablets in the market, and it is measurably beneficial, but *thoroughness* and *faithfulness* in the use of the brush and pick are much more essential. In lieu of the pick, a silk thread may be used, drawing it between the teeth.

Children and youth should visit the dentist as often as once in six months and have their teeth examined, that any decay may be intercepted by timely filling, for decay progresses more rapidly in the teeth of the young than in those of adults. The latter, however, should make it a rule of their life to visit the dentist once each year, if they would preserve these important organs in a useful and healthy condition.—*Western Journal of Health.*

FARMER BROWN AND HIS TOOTHACHE.

"Good morning Mr. Brown,—fine morning. The soft zephyrs, as they steal—,"

"Don't talk to me about stealing!—Pull my tooth. All night long it has been flashing pain through my head like lightning, and growling like thunder! A fine morning, indeed! I was never in such a storm in all my life. It has whirled me to the very brink of hell."

"Excuse me. Take the chair; you shall be transported to Heaven. There;—where is now your thunder storm?"

"Great Heavens! am I here? If I wasn't transported to Heaven, I saw its stars! Oh, how that hurt me!—Doc; take that fancy box away, or I'll spit in it."

"Why, man; don't spit on the floor, in that way; spit in the spittoon."

"Gracious goodness; I thot it was your money-box. I put your quarter in it, anyhow. —Sally Jane, now for the rest of those cab-bages; they must all come in to-day."

To those afflicted with feet too strong in odor for the comfort of their neighbors, regardless of the three or four thorough washings and frequent changes of hose they are subjected to each day, we would advise a simple and harmless remedy, many times advised by the physician, which is equal parts of pulverized burnt alum and salicylic acid. Bathe and dry the feet well, then rub them freely with the powder and for a few days keep the stockings also well dusted with it. The alum you can prepare at home and your druggist will supply the other ingredient. Remember this is not a cure-all, but it will improve most cases and cure many.—*Journal of Health*.

The Nerves and The Mind.—So far as I know, the most eminent authors who have written on the subject have endeavored to account for physiological phenomena on purely physical principles, that physical forces are alone concerned in the production of physiological processes,—though all, I believe, admit that mental causes modify some of the phenomena resulting from these processes. That physical forces are concerned in these processes no one can deny, but they act as agents, and not as causes. The motions of the brain that attend mental processes have an origin above that which constitutes any of the physical forces. Thought does not originate from the action of any force that is merely physical. There is no possible chemical combination, nor any possible arrangement of the physical forces, that can give rise to a single thought. Thoughts often come unbidden and unsought; they are sometimes forced on us, and cannot be accounted

for by any molecular changes in the gray substance of the brain, however subtle these may be. This is so far the reason that this world is not a world of causes, but a world of effects. Causes are superior to all physical results, and have their origin in the supernal.

This world of causes—this spiritual world—is constantly as near to our spirits as the material world is to our bodies, and each affords the requisite elements of nutrition and sustenance appropriate to their respective spheres.—*C. W. Spelding.*

Reflex Pain.—Thought is a function of the vital force in gray matter, and this is as far as we can trace that phenomenon. As to misplaced pain, there is not, perhaps, a more interesting subject than this reference of pain to another part. Let us examine the sensory function for a moment. I have power with the hand to recognize a smooth surface, heat, cold, etc. The retina is sensitive to certain forms of motion which we call light, the inner ear to a different form of motion, and so on. Did anyone ever know a reflected pain where the sense of touch was implicated? Sense of touch is the great localizer. It is the only sense of localization the nervous system possesses. The dental pulp has no sense of touch; neither has the liver,—its pain is manifested at a point under the shoulder. The pain of iritis is felt in the brow; of hip-joint disease, in the knee. An Irish woman had cured pain in an upper tooth repeatedly in which I found no decay, but three days after when I had extracted an affected lower tooth she agreed with me that this had been the cause of her trouble.—*G. V. Black.*

Strange so many people prefer paying the dentist for curing what they could have so easily prevented. Prevention is much cheaper and better than cure.

A MEMORY.

BY HELEN CHASE.

I can feel his eyes upon me,
 Though my glance is turned away
 To the rich and glowing colors
 Of the fast-departing day;—
 I can feel his touch upon me,
 And I thrill with conscious pain,
 While from my eyes are dropping
 Tears, like wayward April rain;
 Lips and brow and cheek he presses—
 Torture exquisite! In sooth,
 'Tis my dentist—filling, filling
 A much-worn bicuspid tooth!

—*Boston Courier.*

Editorial.

INJURIOUS TO THE TEETH.

Many drugs and many diseases exert an injurious influence on the teeth; among the former, iron, alum, citric, nitric and other acids, and acid solutions of quinine; among the latter, measles, scarlet fever, acid dyspepsia, rickets, septicæmia, syphilis, and disease of the womb. Even pregnancy tends to impair the teeth; this, however, is supposed to be caused by the demand for bony constituents for the growth of the child.—MEDICAL WORLD.

Isn't it time some of our old notions were corrected? Take the above.

1st. Do any of the mineral acids produce caries? We know this has been long a popular notion; but we think close observers will find they do not. They only soften the fibers.

2nd. There is nothing in measles or scarlet fever to destroy the teeth, tho these and most other diseases so vitiate the secretions of the mouth as to invite fermentation of vegetable acids; and the fermentation may injure the teeth. This follows by the degeneration of starch and sugar.

3rd. Acid dyspepsia is almost universally looked on as a cause of caries; tho many who are troubled by this disorder for years have good teeth. We were terribly afflicted with it for twenty years, yet never lost but four,—third molars,—during all this time, and these decayed while coming in. If the saliva is alkali or even neutral, as it is in its normal condition, eructations of acid or acid gases from the stomach will not produce caries.

4th. What nonsense to suppose caries in pregnancy is caused by the demand for bony constituents for the growth of the child. The teeth are not bones; they are of the dermoid membrane. As well may we talk of abstracting bone from the hair, nails, and skin. We grant there is lime in them, but by what process can this be dissolved out of the body of the tooth and carried into the circulation? And if we suppose it taken from the surface of the tooth, how is it taken from thence into the circulation? But even this abstraction of lime would not cause caries; the result would be only a softening. It is the degeneration of the organic substance of the tooth that causes caries.

Mr. Gladstone, late premier of England, says of our spelling: "I often think, were I a foriner, and had set about lerning English, I woud go mad. I honestly coud say I cannot conceive how it is he lerns to pronounce English, when I take into account the total absence of rule, method, and system, and all the auxiliaries people usually get when they have to acquire something of attainment."

POST GRADUATE STUDY.

Dr. J. S. Moody, of Illinois, read an interesting essay on this subject before the State Dental Society of his State. He advocates a systematic course, somewhat on the basis of the excellent Chautauqua system.

It is noteworthy that the studies of the student proper, tho they may embrace "the regular course" at college, is not sufficient for the life needs of the dentist; at best they should be but the foundation for future study.

Yet the scientifically inclined dentist cannot leave his practice to attend a special course of college lectures; and if he could, it would not be sufficient. It must be a course of studies he can pursue at home, and during a limited time each day.

In this way, "The Chautauqua Literary Course" is educating thousands all over the land. In some respects, it may not be as thoro as a college course, but, for the general needs of daily life, it is more comprehensive, practicable, and useful. This mammoth national class is being benefited every way,—the mind is stored, the intellect is expanded, the general views are broadened, and the whole man is cultivated. Let us have a Dental Course based on a similar system.

Dr. Moody suggests the following topics:

1. Physics: Molecular and Mechanical.
2. Electricity and Magnetism.
3. Chemistry: Organic and Inorganic, with Chemical Physics.
4. Metallurgy.
5. Microscopy: Technical only.
6. Zoology: Invertebrate Morphology.
7. Botany: Systematic.
8. Anatomy: Human and Comparative.
9. Embryology.
10. Odontology: Comparative.
11. Histology: Vegetable and Animal.
12. Physiology: Vegetable and Animal, with Chemical Physiology.
13. Bacteriology.
14. Pathology: General and Dental.

Lord Lytton says of English orthography: "A more lying, round-about, puzzle-headed delusion than that by which we confuse the clear instincts of truth in our spelling was never concocted by the father of falsehood. How can a system of education flourish that begins with so monstrous a falsehood which the sense of hearing suffices to contradict?"

The ignorance of some dentists is a shame. They have worked into their practice without proper preparation, and they continue in it without study. Their whole course is impractical and their success is attributable more to their unlimited brass than any merit. How can they obtain the patronage of a sufficient number of gullable people to give them even a scant living?

The worst feature of this condition of things is that these ignor-amuses are too stupid to see their ignorance, or to have a desire for wisdom. They are more positive in their assertions than the really wise man, more confident in their diagnosis than the most learned, and more positive in their prognostigation of treatment than the really successful. How we should like to give such adventurers a little plain talk; but they are too parsimonious to take a dental journal, too self opinionated to be instructed, and too obdurate to feel reproof, however well deserved.

The writing part of editing a paper or magazine is but a small portion of the work. The care and time employed in selecting, is far more important, and the fact of a good editor is better shown by his selections than anything else. This is more than half the battle. An editor ought to be estimated, and his labors understood and appreciated, by the general conduct of his paper—its tone, its uniform, consistent course, aim, manliness, dignity, and its propriety.—*Louisville Courier*.

Dr. A. S. Hazen and daughter, of Sharpsville, Pa., were taken to a hospital at Elmira, N. Y., lately while suffering from the cocain habit. They soon became nearly frantic, and were only made quiet by further hypodermically injected doses of cocain.

Glucose.—I am afraid we shall have to bid good by to our prejudices and accept of glucose as a digestable and healthy article of food. Scientists generally seem bound to thus represent it.

In Using Borax as a flux, first burn it till it ceases to bubble, then pulverize. This will not boil or blister under the blow-pipe while soldering.

The American Dental Association has honored itself in honoring Dr. W. W. Allport with its Presidency. We hear high praise too, of the impartiality and wisdom which characterized the retiring president.

It was *All-port* and not champagne that did Wind-er up at the Falls.

TOO MUCH CHLORAL FOR THE TOOTHAKE.

LOUISVILLE, Ky., July 23.—A *Courier Journal* special from Frankford says that T. H. Woodward, a travelling man from Louisiana, died suddenly there from the effects of an overdose of chloral taken to allay an attack of toothake.

A Dead Piece of Bone inserted under the skin of an animal, and examined a few weeks after, will be found interpenetrated with vascular granulations, and the tubercle will be beset in many places with giant cells. The whole process is very similar to that of physiological bone-resorption.

Dental Current Literature.—According to Wm. Bear, of New Castle-on-Tyne, Eng., of the dental periodicals now published, America has twenty, England four, France four, Germany four, Italy two, Denmark one, Spain one, Canada one, Cuba one, Belgium one, Russia one, Austria one. In the United States there are one hundred and ten Dental Societies, England has two, Canada two, Cuba one.

The Medical World,—Is placed on our exchange list with pleasure. Its articles are short, spicy and practical. Its motto: "No long articles" is becoming quite popular in professional journals. C. F. Taylor, M. D., editor, 1520 Chestnut Street, Philadelphia. Price, \$1.00.

The Western Journal of Health,—Is a new household magazine of interest and intelligence. It starts out with a creditable article by Dr. S. H. King, on *Care of the Teeth*, which we gladly transfer to our Patient's Department of the Items of Interest. This is followed by other subjects of equal interest. H. Simmons, M.D., editor, Lincoln, Neb., Price, \$1.00.

Dental Science; Questions and Answers—being a compendium of lectures on dental materia medica, dental physiology, dental pathology and therapeutics, by Luman C. Ingersoll, A. M., D. D. S., Dean of the Dental Department of the State University of Iowa. It is sixty lectures condensed; the result of thirty years' experience at the Operating Chair; thus it may be considered a book for all who desire to study Dental Science from a practical standpoint,—a book of ready reference for practitioners, and a dental student's manual. Price, \$2.00. Postage free.

The Membership of Dental Societies in this country is said to be about 4,250. This is more than a third of all the dentists.

Miscellaneous.

SEAT AND ORIGIN OF PAIN.

Pain is so habitually associated with the *nerves* that it may seem at first absurd to speak of it having its seat and origin anywhere else. We know that one grand function of the general nervous system is to transmit sensation, which, when it is unpleasant, we call pain. We know that the posterior roots of the spinal nerves have this apparently for the exclusive functions. This cannot be denied, yet we find a factor of so much greater significance and power in respect to the existence and the degree of pain, that tho its transmission is independent on the nerve fibers only, we may fairly say that its seat and origin are beyond, and are not physical. Pain is *mental*.

We do not intend to assert by this that there is no physical pain, but we do assert that apart from mental activity the degree of pain which exists thruout the domain of animal life is relatively so much less than what our sensations induce us to believe that, if we were able to eliminate the mental element in our experience, the *pains* we so often bear would lose, not their existence certainly, but most surely all their severity. Our reasons for this belief.

The first point is this: all animals of lower grade than human suffer much less pain from physical injuries than our own sensations convey to us. We can see the proof of this in their habitual actions. Many of the starfishes detach parts of their arms, at the very smallest provocation, and remain uninjured by the change or loss. The Holothurians pinch their bodies by contractions of their circular muscles til the posterior portions drop off in successive fragments and perish. This they would scarcely do if the process involved pain.

But leaving the invertebrates, and ascending to the fishes, it is a fact well known to all anglers that a fish which has torn away the hook from a line in its struggles to escape will take the bait again as soon as its fright has past off, and while the hook still remains in the jaw which it has perforated. Catching a swell-fish in shallow water, and dropping it overboard as of no value, you may any day see it swim strait to the bottom and take your bait as quick as it reaches there. In "cutting in" a whale in the low latitudes, sharks swarm round eager for food. As they may cause danger to the two men who are at work on the body of the whale, it is customary to place a man on watch with a whaling-spade to drive them away. It is great fun for him, and he chops the sharks without mercy. Very often a vigorous blow of his keen-edged spade lays the whole side of a shark open, leaving his intestins exposed and floating out from his abdomen as he swims, and yet this does not stop him or seem at the first to cause him any special annoyance, for he snaps up ever bite of blubber he can get as readily as before.

But it may be said these are cold-blooded, and probably very little sensitive. Turning, then, to a grade much hier, a single incident may suffice to illustrate our point as well as a detail of many others could do. One day a young deer was brout into camp whose fore leg had been broken by shot. In the hope of saving it for a children's

pet, we decided to amputate the leg near the shoulder. No chloroform was at hand, and the amputation was made without any anesthetic. This very subject of pain in animals we had in careful consideration at the time, and we watcht for its manifestation. But scarcely the slightest sign of it was apparent. The eye of a deer is singularly expressive; and if any faith can be placed in such tokens, the actual pain which that fawn experienced during the operation was certainly slight.

Once more, and coming still hier, we recognize the fact, which is well known, that savages pay small attention to injuries at which our more polisht classes woud manifest intense suffering. It may be said that because they take pride in enduring pain, and therefore make no manifestations. This may be true in some cases, as for instance in the presence of hostile assailants, but other circumstances show quite conclusively that they really feel the pain in only small mesure. One of the missionaries in Damara-land stated, not long since, that the natives there are constantly coverd with blisters which to us woud be fearfully distressing, but which they almost totally disregard. The origin of the blisters is the curious point. They crowd up so closely to their camp fire, for the sake of the pleasant warmth, that the skin is burnt before they become conscious of the fact, and the heavy blisters are the result.

Still again, every surgeon sees convincing proof in his daily experience that the sensitiveness of his various patients varies so widely that there must be some cause for it beyond that which is physical. There is no such wide diversity in the nerve tissue of their systems, either of the cells of gray matter or the fibers of white matter, as can account for the extreme differences with which they not only manifest pain, but with which they doutless feel it; and he also knows well that the mental attention may be assuredly so totally abstracted as that the body shall be completely insensible to pain.

Now, we by no means propose to encourage "cruelty to animals" because we argue that they suffer less than has been commonly supposd. The old statement, that when we step on a worm we cause it as great a pang "as when a giant dies" (Query: why *giant*?), may stand well in poetry, and serve a good purpose. We only put forth these views as having an important physiological and pychological import.—*Scientific American*.

TO REMOVE SUBSTANCES FROM THE EYE.

DR. C. D. AGNEW, in the *American Practitioner*, says, that, before applying anything metallic to the human eye, practitioners or others should use an instrument made in the following manner: Take a splinter of soft wood, pine or cedar, and whittle it into the shape of a probe, making it about the length of an ordinary dressing-probe. Then take a small, loose flock of cotton, and, laying it on your fore-finger, place the pointed end of the stick in the center of it. Then turn the flock of cotton over the end of the stick, winding it round and round so as to make it adhere firmly. If you will look at the end of such a probe with a two-inch lens, you will see that it is quite rife, the fibers of cotton making a file-like extremity, in the midst of which are little interstices. As the material is soft, it will do no harm to the cornea when brusht over its surface. When ready to remove the speck

have the patient rest his head against your chest, draw the upper lid up with the fore-finger of your left hand, and press the lower lid down with the middle finger, and then delicately sweep the surface in which the forin body is embedded, with the end of the cotton probe. When it is lodged in the center of the cornea, it is most important not to break up the external elastic lamina; for, if you do, opacity may follow; and the slightest opacity in the center of the cornea will cause a serious diminution in the sharpness of vision.

It should be borne in mind that forin bodies are quite as apt to lodge on the inner surface of one of the eyelids, as on the cornea, and that generally it can be removed by a dexterously folding the lid outward, and then, as it is brot back to its place, allowing its inner surface to rub against the edge of the opposit lid. If the speck is of such a character as to have cut into the surface of the eye or lid, place a darning needle or some such an instrument, across the farther extremity of the lid and enfold the lid back on this, which will give a good view of its inner surface, and of the ball of the eye. The speck can then usually be removed by brushing it with a fold of a soft silk handkerchief; tho the fold of cotton proposed by Dr. Agnew is perhaps, better, if at the time procurable.

It should be remembered, also, that nature has provided a little fold or groove in each lid, just under its edge, and so formed the inner surface of the lid, and lubricated it, that specks are swept into it by the motion of the lid and of the eye, and from thence thrown out by the flow of tears. We take advantage of this in the manipulation referred to; for if the speck is on the inner surface of the lid it will ofn be thrown into this groove, if it is not lodged against the edge of the opposite eye-lid.

FATIGUE AND INDIGESTION.

The following wise remarks on this subject we quote from *Health*, an English monthly devoted to scientific hygein:

A cause of imperfect digestion is fatigue. When we start on a walk, it does not matter much whether the road is ruf or not; any little obstacle is avoided with ease, and we thred our way over ruf stones, thru tangld heath, or over a quaking bog, without difficulty. Our nervous system is in full vigor, and preserves perfect co-ordination among the movements of the different parts of the body; so that one helps the other, and all difficulties are surmounted. But when we are tired a little rufness in the road will cause us to stumble, and an unexpected stone may give us a sudden fall. The wearied nervous system no longer co-ordinates the movements of the various parts of the body, that they may work together for a common end.

The same thing occurs with the various parts of the intestinal canal. If the nervous system is exhausted by previous fatigue, or debilitated by illness, the requisit co-ordination may not take place, and biliousness or indigestion may be the result. How ofn do we find the meal taken by a person immediately after a long railway journey disagrees with him, and either causes sickness or diarea, or a bilious headache? Forty winks after dinner is not always a bad thing; but forty winks before dinner is certainly much better.

How often do men who have worked hard all day, with their mental faculties constantly on the stretch, go home and have dinner forthwith! Exhausted as they are, how can they expect to digest properly what they eat? They do not make a point of having a little rest at home before dinner.

There is grave truth in these remarks, and they should be well laid to heart by those who are compelled to work at high pressure, and thus fail in that repair of the bodily waste which lies at the foundation of health. But mental emotions and the play of mind may in their turn produce disturbances of the body's duties in the way of food digestion. Here, again, the views expressed seem to have a common sense and philosophy which commend them to the thorough appreciation of those who find digestion to fail from the nervous influences that chase one another and career over the surface of the mental atmosphere.

Effects, somewhat similar to those of fatigue, may be produced by depressing or disturbing mental emotions, or bodily conditions. We know how readily excitement of almost any kind will destroy the appetite of some people, and depressing emotions will do it.

From this it would seem to be equally probable that various emotions affect special parts of the digestive system. A strong impression of disgust may excite vomiting; compassion is said to produce movements of gas in the small intestine; worry is known to affect the liver; and Dr. Brunton gives some countenance to the popular notion that jaundice may be brought on through a mental cause, illustrated, for example, by anxiety. The old adage respecting the wisdom of maintaining an easy mind if we would grow fat, has therefore, a physical basis. It is the surest of inferences that the mind and nervous system which are allowed to remain placid and unruffled, are most likely to be found presiding over a body and processes which respectfully live and act in a healthy and normal fashion. If care really kills us, it seems probable that its method of slaughter is largely that of destroying the harmony of those functions on which the proper nutrition of our bodies depend.

Aluminum.—Extensive works are being erected on the northern side of the Blue Ridge mountains in North Carolina for the production of aluminum from corundum. Says the *Lockport Union*:

Hitherto the process of obtaining aluminum has been very expensive through a combination of chemical agencies and heat. At the works the corundum will be subjected to intense heat, then broken and ground to powder, after which it will be fused in hermetically sealed crucibles by the powerful electrical current generated by the employment of the largest dynamos that have ever been constructed. The product is the pure aluminum, of which the yield from the corundum is about fifty per cent. No doubt is entertained of the success of the electrical process, which, though so recent a discovery as not to be described in scientific works, has been thoroughly tested. Large quantities of the alloy will be manufactured at the works, requiring, it is estimated, from 10 to 20 tons of copper a day when the works get to running to their full capacity. As a very serviceable alloy may be made with only five per cent of aluminum, it is evident that a very large amount of copper will be required.